

volunteered for service at the front, and received commissions. Capt. Macmillan was wounded while leading his company into action and died of his wounds on the 9th May 1915. His death will be a great loss to the Survey.

Tamias maclellandii, Horsf.

19 specimens referable to *T. maclellandii* were obtained during the Chindwin expedition.

Of these, 16, collected down the East bank of the river from Hkamti to Homalin, may be provisionally referred to true *maclellandii*, while the other three, from the Chin Hills, appear to represent *T. m. manipurensis*, Bonh.

Further study of both forms however is needed, both with regard to their geographical range and seasonal variation, on which latter point material is sadly lacking.

Persons living in the areas where these beautiful little squirrels are found would do a great service by collecting series of them all round the year—say, two every month—so that a thoroughly sound idea could be gained as to the seasonal changes they undergo.

B.—NOTES ON THE GENUS *CREMNOMYS*.

BY OLDFIELD THOMAS.

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The Rock-rats of the genus *Cremnomys* afford a striking instance of the increase of our knowledge and material due to the work of the Bombay Survey. None of these Rock-rats had ever been obtained at all by any Indian naturalist until the survey collector Mr. Crump got a small series in Cutch in 1911, on which Mr. Wroughton described the genus.

Now, there are available for examination no less than 238 specimens, representing, each with fair series, eight localities, from Cutch and Kathiawar in the North-west, Hazaribagh in the North-east, to Bellary and Seringapatam in the South, a range which makes it most astonishing that no *Cremnomys* had been found before 1911. The explanation is no doubt that these rats can only be obtained by systematic trapping, and so do not fall into the hands of the casual naturalist, who trusts to his gun and to natives for what mammals he gets. *Cremnomys* cannot be dug out, owing to the rocky nature of their habitat and so are never captured by natives.

Inhabiting as they do groups of rocky hills more or less isolated from each other, it is natural to find a certain amount of local difference between the specimens from different localities, and I have therefore now divided the series into three species, and these

again into sub-species. The characters are however not very important, and some variation is observable in them. But these variations must to a certain extent be ignored unless we are unintelligently to lump the whole series together, and so close our eyes to the unquestionable local differentiation that exists.

1. *Oremnomys cutchicus*, Wrought.

Size little if any less than in the other species, but feet distinctly smaller, only 23, 24 or 25 mm. in length. Molars 5.2 to 5.4 mm. Skull usually about 33 mm. in length. Colour above rather pale, more buffy, less clear grey than in *australis*; below the usual condition is that the hairs of the sides of the belly are grey-based, those of the middle line white throughout. As a consequence the under-surface is whiter than in *medius*, not so white as in *australis*. Supraorbital crests delicate.

Habitat.—Cutch only, the *Oremnomys* of Kathiawar being *O. medius*. 34 specimens collected.

The small feet of this species distinguish it from the other members of the genus. In colour, as might be expected from the local conditions, it approaches *C. australis* of the equally dry Bellary area, but is not so extreme.

2. *Oremnomys medius*, sp. n.

Size averaging largest of the genus, hindfeet 26, 27, or 28 mm. in length. Molars 5.4—5.7 mm. Skull, 34—35 mm. in greatest length. Colour comparatively dark above. Below, the hairs are generally all grey-based, resulting in a blue-grey tone. Ears averaging rather larger than in *C. australis*. Supraorbital crests generally heavier than in *cutchicus*, lighter than in *australis*.

Range.—From Kathiawar, Gujarat and S. Rajputana across to Bihar and Orissa.

SUB-SPECIES.

2-a. *Oremnomys medius medius*.

Fur rather short. General colour above comparatively dark, wood-brown darkened by the black ends to the hairs. Head little greyer. No specially marked nuchal patch. Undersurface blue-grey throughout.

Dimensions of the type, measured in the flesh :—

Head and body 124 mm.; tail 148; hindfoot 27; ear 20.

Skull, greatest length 35; condylo-incisive length 30.7; zygomatic breadth 16.5; nasals 14.7; interorbital breadth 5.2; upper molar series 5.4.

Habitat.—Kathiawar and Gujarat. Type from Kudia, Junagadh, Kathiawar. Alt. 2,500.

Type.—Adult female. B. M. No. 13. 8. 8. 128. Original number 2042. Collected 30th November 1912 by C. A. Crump.

Presented to the National Museum by the Bombay Natural History Society, as are also the other types mentioned below, together with representative series of each form. 43 specimens.

2-b. *Cremnomys medius rajput*, sp. n.

Proportions about as in *C. m. medius*. Fur long; rather thin. General colour paler, the fore-back fawn grey passing posteriorly into bright "pinkish buff" more or less lined with blackish; sides also prominently pinkish buff. A buffy patch generally present across the nape and back of the ears, contrasting with the more greyish general colour of the crown and fore-back. Undersurface greyish white, the grey more overlaid with white than in true *medius*, and sometimes almost absent.

Dimensions of the type:—

Head and body 126 mm.; tail 166; hindfoot 27; ear 20.

Skull, greatest length 35.4; condylo-incisive length 31.3; zygomatic breadth 17.2; nasals 15; interorbital breadth 5.2; upper molar series 5.6.

Habitat.—Mt. Abu, Rajputana. Alt. 4,300.

Type.—Old female. B. M. No. 13.9. 18.40. Original number 3357. Collected 1st June 1913 by C. A. Crump. 60 specimens.

Although on the map Mt. Abu appears comparatively near to the localities where *C. m. medius* was obtained, Mr. Wroughton tells me that it is really quite isolated, and that the occurrence there of a distinct form of Rock-rat is not unnatural. Certainly the buffy coloration of the hind-back and nuchal patch appears distinctive.

2-c. *Cremnomys medius caenosus*, subsp. n.

Fur thin and poor. Colour dark mouse-grey, grey above, bleaching to dull tawny on the hinder-back; no perceptible nuchal patch. Undersurface dirty greyish, the slaty bases of the hairs little hidden by their white tips.

Dimensions of the type:—

Head and body 125 mm.; tail 157; hindfoot 28; ear 21.

Skull, greatest length 35.1; condylo-incisive length 30.4; zygomatic breadth 17; nasals 14.5; interorbital breadth 5; upper molar series 5.6.

Habitat.—Bihar and Orissa. Type from Singar, Gaya, 1,400', others specimens from Gujhundi, Hazaribagh, 1,000'.

Type.—Adult male. B. M. No. 15. 4. 3. 137. Original number 5027. Collected 30th May 1914 by C. A. Crump. 8 specimens.

This dull coloured form, from the dark soil of what used to be Western Bengal, occurs more than 700 miles away from its Gujarati ally, no member of the genus having as yet been found in the intervening area.

3. *Cremnomys australis*, sp. n.

Size about as in *C. medius* or a little less, but the feet rather longer in proportion. Molars small, the series 5.0-5.4 mm. Colour pale buffy grey above, pure white below, the hairs either all white to their roots, or grey-based just along the sides of the belly. Ears averaging rather shorter than in *C. medius*. Supraorbital crests comparatively thick and solid, with perceptible postorbital angle.

Range.—Bellary and Mysore.

SUB-SPECIES.

3-a. *Cremnomys australis australis*.

Colour above pale buffy grey, the crown and fore-back greyer ("drab-grey"), the nape and hind-back more buffy, but the contrasts little marked. Sides greyer, not buffy. Undersurface pure sharply defined snowy white, the hairs mostly white to their roots.

Dimensions of the type:—

Head and body 127 mm.; tail 169; hindfoot 27; ear 18.5.

Skull, greatest length 34.3; condylo-incisive length 30.5; zygomatic breadth 16.7; nasals 14.3; breadth of brain-case 14.4; upper molar series 5.3.

Habitat.—Bellary (Type from Vijayanagar 1,500') and E. Mysore (Kolar Town 3,000').

Type.—Old female. B. M. No. 13. 4. 10. 57. Original number 1633. Collected 10th August 1912 by G. C. Shortridge. 63 specimens.

This beautiful form is readily distinguishable by its pale grey colour and snowy belly.

3-b. *Cremnomys australis siva*, subsp. n.

Slightly larger than *C. australis australis*, hindfoot 28—29 mm. Colour above rather a darker grey than in that form (near "mouse grey" of Ridgway). Undersurface white, but not so sharply defined or so snowy a white as in *australis*, the hairs on the chest and sides of the belly commonly with grey bases.

Dimensions of the type:—

Head and body 149 mm.; tail 159; hindfoot 29; ear 19.

Skull, greatest length 34.7; condylo-incisive length 30.4; zygomatic breadth 15.8; nasals 15; breadth of brain-case 14.2; upper molar series 5.4.

Habitat.—South Mysore. Type from Sivasamudram 2,500', others from French Rocks, near Seringapatam, 2,600'.

Type.—Adult male. B. M. No. 13. 4. 11. 78. Original number 2125. Collected 25th November 1912 by G. C. Shortridge. 30 specimens.

While *australis* is pale and snowy-bellied in correlation with the extreme dryness of the Bellary and E. Mysore area, the present form, nearer the Western Ghats, and therefore in a more rainy district, is darker in general colour, and its belly is less completely white. Its feet are the longest found in the genus.
